Small Business Innovation Research/Small Business Tech Transfer

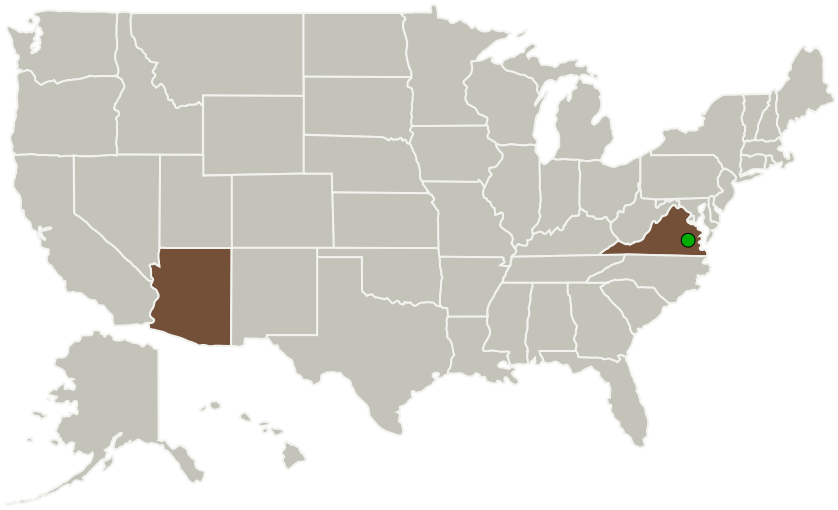
780 nm Single-Frequency Laser Source for High Spectral Resolution Lidar, Phase I

Completed Technology Project (2016 - 2016)

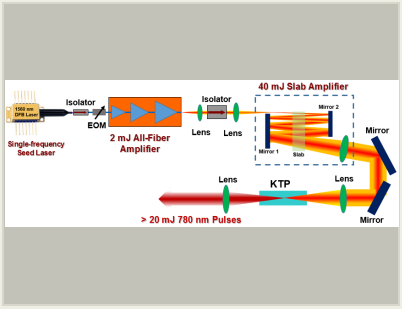
Project Introduction

High energy narrow-linewidth and frequency stable laser transmitter at 780 nm is in great demand for the development of low-cost, compact, and eye-safe high spectral resolution lidar (HSRL) for accurate aerosol and cloud profiling and distinguishing among different aerosol types. NP Photonics proposes to develop a 780 nm laser source capable of generating 20 mJ nanosecond pulses at a repetition rate of 10 kHz with wavelength tunability > 0.5 nm by use of our proprietary and mature highly doped short-length fiber amplifier technology and innovative Innoslab amplifier technology. The advantages of our proposed laser system include high reliability, narrow-linewidth, super stability, high spectral purity, robustness and compactness.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
NP Photonics, Inc.	Lead Organization	Industry	Tucson, Arizona
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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Primary U.S. Work Locations	
Arizona	Virginia

Project Transitions

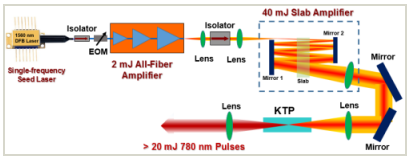
June 2016: Project Start

December 2016: Closed out

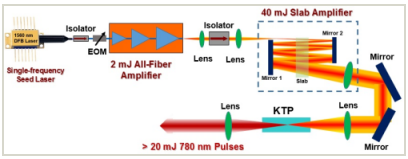
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140315)*

Images



Briefing Chart Image
780 nm Single-frequency Laser Source for High Spectral Resolution Lidar, Phase I
(https://techport.nasa.gov/image/129181)



Final Summary Chart Image
780 nm Single-frequency Laser Source for High Spectral Resolution Lidar, Phase I Project Image
(https://techport.nasa.gov/image/132023)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

NP Photonics, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

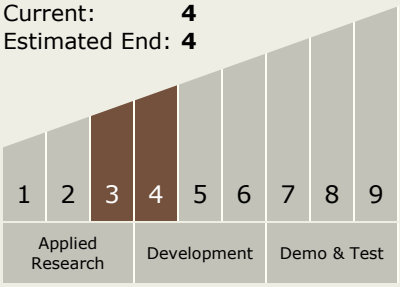
Carlos Torrez

Principal Investigator:

Xiushan Zhu

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System